XV.—*Observations on the Roman Pilum.* By WILLIAM MICHAEL WYLIE, Esq.,
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Pila volunt, brevibusque habiles mucronibus enses.—Silius Italicus.

THE Roman Pilum is a *quæstio vexata*, which has been, for ages, an embarrassment to all thinking men given to the study of classical literature.

Polybius first gave us an account of this wonderful weapon, which, in conjunction with the *gladius* and the military discipline of Rome, won for her the mastery of the world. It is a subject full of interest—it may be said of never-failing interest—for it had been abundantly discussed by the learned before the days of the celebrated Scaliger, and, according to M. Quicherat and his friends, “adhuc sub iudice lis est.”

Scaliger, as tradition runs,^a deemed all that had been written on the pilum so unreal and so unsatisfactory, that he resolved on publishing his own views on the matter, and was engaged on this last labour at the time of his decease at Leyden, in 1609. Since that period much more has been written, equally unsatisfactory, and equally untenable.

In fact, till lately a real corporeal Roman pilum had been the great desideratum of the learned. Men had often enough dreamed of such a thing; but, as with dreams in general, “*vanæ fingentur species.*” No one had seen a pilum, or, if haply seen, it had not been recognised. Minds were constantly running on the one catapultic marvel of Polybius, forgetful that he mentions also a second and lighter pilum; that time and occasion invariably bring change; and that Camillus, Marius, Cæsar, Vegetius, and, it may be, others, had their respective pila, all somewhat differing, and all equally well authenticated.

It has been reserved for our days to furnish a rational explanation of the weapon. For this we are, in truth, indebted conjointly to the judgment and

^a Pitisci *Lexicon Antiq. Rom.* Leovardiæ, under the head *Pilum*.

^b *Die Alterthümer unserer heidnischen Vorzeit*, 4to. Mayence.

^c Lecture on the Pilum, in the *Verhandlungen der xxi. Philologen-Versammlung*. Heidelberg, 1863.

experience of Dr. Lindenschmit;^a to the critical acumen of Dr. Köchly;^b and the unwearied investigations of our august *confrère* the Emperor of the French, at Alise-Sainte-Reine,^c which have been attended with such signal success. We have thereby obtained a complete identification of the weapon, such at least as it existed from the days of Cæsar down to a late period of the Empire. If any one, however, should fancy that unanimity had been at last obtained, the recent letter of M. Quicherat, in the *Revue Archéologique*,^b may suffice to undeceive him. Still there remains to us that ancient difficulty bequeathed by Polybius.

Before we venture on our Polybian text, it may be well to consider what historical traditions exist of the use of the pilum, or similar weapons, among other Italic peoples. Although little may be gleaned, still that little will assist us in our conclusions, and no attempt in this direction seems to have been made before.

It is probable enough that a weapon, possessing some of the peculiarities of the pilum, may have long existed among the Sabines, and other tribes, close neighbours of the Romans, who, in this manner, may have been led to adopt it. To such a weapon Virgil alludes when he speaks of the "*Volscos verutos*."^e

Again, we find another similar reference in the *Æneid*,

. pugnant mucrone, veruque Sabello,^d

which has no little resemblance to the line of Silius Italicus before quoted.^e Now we have the statement of Festus that the *pilum* and *verutum* were but synonymous terms.^f

Virgil also places another weapon of this kind in the hands of the Rutilian Turnus :—

Sed magnum stridens contorta *falarica* venit,
Fulminis acta modo.^g

Livy, in his especial mention of the Saguntine weapon, to which he gives the name of *falarica*, explains that, like the pilum, it had a long iron head. We also learn from him that the pilum head was quadrilateral, "*sicut in pilo quadratum*."^h

^a Les Armes d'Alise, par M. Verchère de Reffye, in the *Revue Archéologique*, x. 337.

^b Examen des Armes trouvées à Alise-Sainte-Reine, par M. Quicherat, in the *Revue Arch.* xi. 81. Also, the able reply of Dr. Lindenschmit in the same volume, p. 387.

^c Georg. lib. ii. 168.

^d *Æn.* vii. 665.

^e Lib. viii. 373. "*Pila volunt, brevibusque habiles mucronibus enses.*"

^f Festus (De Verb. Sign.) *Veruta pila dicuntur, quod habent præfixa.*" Also Livy, lib. i. c. 43. "*Arma mutata, nihil præter hastam, et verutum datur.*"

^g *Æn.* ix. 705.

^h Liv. lib. xxi. 18. "*Falarica erat Saguntinis, missile telum hastili oblongo, et cetera tereti præterquam ad extremum, unde ferrum exstabat: id, sicut in pilo, quadratum, stuppa circumligabant linebantque pice.*"

In the dark corner of a glass case in the Bronze room of the Etruscan Museum at the Vatican Gallery lie *perdus* two very remarkable javelin-heads of *iron*, found in a tomb in the ancient Etruscan city of Vulci. These are very indifferently figured in the “Museum Etruscum Gregorianum” (vol. i. tav. xxi. fig. 6), and the incompetent writer of the letter-press of that magnificent work simply classes them as “*lancie e giavelotti* ;” never even stating the fact of their being of iron. One of these is a round rod of some four feet in length, terminating at the one end in an ample socket, and tapering upwards to a slender quadrilateral cusp about half an inch in diameter, which forms five inches and a half of the total length. The other weapon is apparently broken, and the socket wanting. It resembles its companion, but is of far more substantial dimensions. The head is shorter, and an inch in diameter. These weapons are of undoubted authenticity, of which I have certain assurance from Barone Visconti, and the Commendatore Grifi, under whose official direction the museum was formed, and its invaluable contents preserved. They were found in the year 1836. It is not possible even to surmise to what part of the Etruscan period they may belong, for no records were kept of concomitant details, after the usual ruthless manner in which such tombs are rifled by speculators for the mere purpose of gain—not of science. Had these been barbed, they would have been good examples, in most respects, of the heavy and light pilum of Polybius. Whether or not we are to regard them as examples of the Virgilian *verutum*, or *falarica*, it is not unlikely that they were prototypes of the Roman pilum—in fact *ἐπιχώρια δόρατα*.

The very earliest mention of the pilum as a weapon of actual Roman warfare, that I can find, seems singularly well authenticated. It appears in a fragment of Ennius—“*Horatia pila*,”^a—on the occasion of the victory of the Horatian brothers over the Curiatii, A. U. C. 85. This fragment has been, long subsequently, confirmed by Propertius in his lines on Ennius:—

· Et cecinit Curios fratres, et *Horatia pila*.^b

Ennius probably wrote about A.U.C. 560, and any supposed obscurity in this

Ferrum autem tres longum habebat pedes, ut cum armis transfigere corpus posset. Sed id maxime, etiam si hæsisset in scuto, nec penetrasset in corpus, pavorem faciebat, quod cum medium accensum mitteretur, conceptumque ipso motu multo majorem ignem ferret, arma omitti cogebat, nudumque militem ad insequentes ictus præbebat.”

The passage is a valuable illustration also of the usual tactic of depriving the enemy of his shield.

^a Enn. *Annal.* ii. 25.

^b Propert. lib. iii. 3.

fragment is removed by Livy, who explains at full that the “Horatia pila” were the martial trophies set up by the survivor of the Horatii, on his return from victory; and further, that these trophies had given their name to the spot where they had been originally so set up.^a In fact it is certain that the spot retained its name for centuries after.^b Dionysius of Halicarnassus, writing in the Augustan age, tells us the spot was marked in his time by a quadrilateral stone column—“τὴν δ’ ἐπὶ κλησιν ἢ στυλὶς φυλάττει τὴν αὐτὴν, Ὁρατία καλουμένη πῖλα”—against which column the ancient arms, then consumed by time, had once been placed.^c

Next, in point of time, occurs the mention of the pilum, as an accustomed weapon in the Sabine wars, by Dionysius of Halicarnassus; in the war with the Boian Gauls, by Appian; and in the war with the Gauls again at Rome, by Plutarch. But these writers lived in times long subsequent to the events they have recorded; and, of all the classical writers, Polybius I believe was the first to give us, as an actual eye-witness, a detailed account of the pilum, or ὕσσος, as the Greek authors term it, used in the Carthaginian war. The other authors lead us to doubt whether they were not rather describing the weapon they themselves were acquainted with, rather than that in use at the early period of which they were writing. Thus, when Dionysius employs the *present* tense in his account of the pilum used in the Sabine war several centuries before—ἔστι δὲ ταῦτα βέλη Ῥωμαίων—he is probably merely describing the weapon of his own day.^d

Polybius wrote about A.U.C. 600. A soldier himself, and companion of Scipio Africanus, he was consequently well acquainted with the weapon he undertook to describe.^e He tells us there were two kinds of pilum in use at this period in

^a Liv. lib. i. c. 26. “Spolia Curiatorum fixa eo loco qui nunc *Pila Horatia* appellatur, ostentans.”

^b P. Victor, *De Regionibus Urbis Romæ*, places the *Horatia pila* in the viiith *Regio*.

^c Liv. iii. 22.

^d Lib. v. c. 46. “Ἔστι δὲ ταῦτα βέλη Ῥωμαίων, ἃ συνιόντες εἰς χεῖρας ἐξακοντίζουσι, ξύλα προμήχη τε καὶ χειροπληθῆ, τριῶν οὐχ ἦττον ποδῶν, σιδηροῦς ὀβελίσκους ἔχοντα προὔχοντας κατ’ εὐθείαν ἐκ θατέρου τῶν ἄκρων, μετρίοις ἀκοντίοις ἴσα σὺν τῷ σιδήρῳ.”

^e Polybius, vi. 23. “Πρὸς δὲ τούτοις ὕσσοι δύο, καὶ περικεφαλαία χαλκῇ, καὶ προκνημῖς. τῶν δ’ ὕσσῶν εἰσὶν οἱ μὲν πάχεις, οἱ δὲ λεπτοί. τῶν δὲ στερεωτέρων οἱ μὲν στρογγύλοι παλαιστιαίαν ἔχουσι τὴν διαμέτρον· οἱ δὲ τετράγωνοι, τὴν πλευράν. οἳ γε μὴν λεπτοὶ σιβυνίοις ἐοίκασιν συμμέτροις, οὓς φοροῦσι μετὰ τῶν προειρημένων. ἀπάντων δὲ τούτων τοῦ ξύλου τὸ μῆκος ἐστὶν ὡς τρεῖς πήχεις. προσήρμοσται δ’ ἐκάστοις βέλος σιδηροῦν ἀγκιστρῶτον, ἶσον ἔχον τὸ μῆκος τοῖς ξύλοις· οὐ τὴν ἔνδεσιν κατὰ τὴν χρεῖαν οὕτως ἀσφαλίζονται βεβαίως, ἕως μέσου τῶν ξύλων ἐνδέοντες, καὶ πυκναῖς ταῖς λαβίσιν καταπερονῶντες, ὥστε μὴ πρότερον τὸν δεσμὸν ἐν ταῖς χρεαῖς ἀνακαλασθῆναι ἢ τὸν σίδηρον θραύεσθαι, καίπερ ὄντα τὸ πάχος ἐν τῷ πυθμένι καὶ τῇ πρὸς τὸ ξύλον συναφῇ τριῶν ἡμιδακτυλίων. ἐπὶ τοσούτου καὶ τοσαύτην πρόνοιαν ποιοῦνται τῆς ἐνδέσεως.”

the Roman army—a very heavy, and a light one—the former of these we will now consider.

The heavy pilum then consisted of two parts. It had an iron head three cubits, or four feet and a half, in length, which terminated in a barbed quadrangular point, and a wooden shaft of the same length, round or quadrilateral. In either case this shaft had a diameter of a palm, or three inches. The greatest importance was attached at this period to a firm junction of the wooden shaft and iron spear. To effect this it is possible that the end of the iron stem was hammered down to a flat bar form, and inserted into a groove in the shaft. There has always been some difficulty about this junction, and Polybius does not make express mention of the bar form. But he does say that the iron was inserted in the shaft for half its length, or two feet and a quarter, making the pilum six feet and three quarters long. Great care was then taken to secure wood and iron together by numerous rivets or other fastenings, so that a fracture was more likely to occur in the iron stem itself, though a dactyl and a half (= one inch and an eighth) in thickness, at the point where it meets the wood—τῇ πρὸς τὸ ξύλον συναφῇ—than in the actual junction. As I have said, there is some difficulty about this fastening, and other modes may be suggested; but those who contend for the usual socket form will find it troublesome to explain in accordance with our text. The bar form, as suggested above, is at least supported by examples found at Alise-Sainte-Reine.^a These were secured by rivets with large flat round heads, which both give the dimensions of the shaft in such examples, and show it to have been quadrilateral.

These ponderous dimensions of the pilum have always been the point so hard to comprehend, and, in consequence, every possible attempt has been unsuccessfully made to explain away the passage. The testimony of so many historians of so many periods does not admit of the slightest doubt as to the intended employment of the pilum. It certainly seems a weighty missile—οὐκ εὐκότα ἀκοντίοις, as Appian well says—but, though it may occasionally have been used as a spear, that is, as a thrusting weapon,^b or for withstanding a cavalry charge, or any other such special purpose on an emergency, its primary and peculiar use was for hurling as a javelin.^c Yet, it may well be asked, how could men even of a strength

^a *Revue Archéologique*, loc. cit.

^b Livy, lib. ix. c. 19. "Pilum haud paulo quam hasta vehementius ictu missuque telum." Cf. Plutarch in *Camill.*, 40, 41.

^c Ennii *Ann.* viii. 46. "Hastati spargunt hastas; fit ferreus imber."

and stature never attributed to the Romans, have used such a javelin effectively? A round shaft with a diameter of three inches is strangely ponderous, but in the squared form it becomes still more difficult to understand.

It must be observed that modern writers differ considerably in their estimates of the probable weight of such a weapon. Some have placed it as low as ten pounds weight. Professor Köchly carries it up to fifteen at least, while M. de Reffye, who conducted the experiments on the *pilum*, under the direction of the Emperor of the French, supposes it to have been ten kilogrammes, or about twenty-two pounds.^a We know not on what basis these respective calculations rest.

I am aware there is a difference of opinion as to the rendering of the words *πρὸς τὸ ξύλον*, in the text of Polybius. Without entering on this, I will assume him to mean the thickest part of the iron stem—that is, its base *against*, or where it leaves, the wooden shaft. Although then, at this point, it was no less than an inch and an eighth in diameter, yet it would rapidly taper away down to its small barbed head; and I question the weight of such a tapering iron to have been very great. We have then remaining the weight of the mere strig of two feet and a quarter inserted in the wood, and the four feet and a half of the shaft itself. This latter would of course much depend on the kind of wood used. The difficulty would be still further diminished if we could venture on the supposition that the shaft itself also tapered down somewhat to the iron stem at the one end, and to its probable iron, or bronze, shoe—*σαυρωτήρ*—at the other, as the manner of certain lances is, leaving the full Polybian diameter of three inches solely at the balance point, where the hand would grasp and poise the weapon. Fortunately such monumental evidence as we possess bears us out in some degree in this supposition. Two grave-stones of Roman soldiers interred at Bonn on the Rhine still exist in the museum there; and there is another similar monument in the museum of Wiesbaden. These are rudely sculptured effigies,^b but they afford valuable illustrations of the military equipments of Roman infantry. On all of these monuments the *pilum*-head is represented as issuing from the obtuse end of the stout shaft, which in two instances tapers downwards to the place of the *σαυρωτήρ*. On the third monument the shaft is incomplete. The *σαυρωτήρ* is strongly represented on the Wiesbaden monument, and it must necessarily have always existed for the purpose of fixing the weapon in the ground on a halt.

^a *Les Armes d'Alise*.

^b Lindenschmidt, *Alterthümer*, vol. i. heft. viii. taf. vi.

Polybius himself too names it as the termination of the cavalry lance,^a and remarks on its value as a weapon when the lance-head had broken. Examples of its use will be found among the Roman reliques in the Kircherian and other museums of Italy; and others exist in the collection of Padre Garrucci, which he found at Præneste with Roman spears of the time of the Republic.

We must now turn to the lighter pilum of Polybius,^b to which writers, engrossed by the first ænigma, have paid too little attention. It is certainly the more important of the two; for, in all probability, it is the conquering weapon, which, with certain modifications, the Roman legions continued to use down to a late period of the Empire, long after the heavy pilum had become obsolete. It is described as being constructed like the other, only in much lighter fashion. Polybius further tells us, in illustration, that it resembled the *σιβύνιον*, or hunting-spear, sufficient account of which exists in the writings of Hesychius to show that the *σιβύνη*, or *σιβύνιον*, was entirely an iron weapon, and therefore almost necessarily slender, like the pilum-head.^c With this lighter and more tangible weapon, then, we shall solely have to deal.

It only remains to consider the difficulties attendant on the accounts of the heavy pilum, as handed down to us, and to see if any reasonable mode of relieving these difficulties may haply be suggested.

Professor Köchly indeed considers such an arm far too cumbrous and unwieldy ever to have been used in action. He therefore assumes it to have been solely employed as a *pilum murale* for the defence of fortified walls, or entrenchments. The main objection to this view is, that there is nothing whatever in the words of Polybius to sustain it; and that we do not hear of the *pilum murale* at all till the time of Cæsar.^d It remains, moreover, to be seen whether the *pilum murale* did not correspond to the *pilum catapultarium* of Plautus.^e

M. de Reffye, who claims much greater weight for the weapon, by no means seems to come to the conclusion that the weight would preclude its use. He tells us, as the result of the Emperor's experiments, it was found that a practised man

^a Lib. vi. c. 25. "Ομοίως δὲ καὶ τὴν ἐκ μεταλήψεως τοῦ σαυρωτήρος χρεῖαν, μονίμον καὶ βίαιον."

^b Loc. cit.

^c Hesych. i. "Σιβύνη, ὁλοσίδηρον ἀκόντιον ἢ λόγχη." Idem. ii. "Σιβύνη, ὄπλον δόρατι παραπλήσιον." Arrian. "Οἷς δὲ κοντοῖς, μακρὰ καὶ ἐπιλεπτὰ τὰ σιδήρια προήπται."

^d *De Bell. Gall.* v. 40; vii. 82.

^e *Curcul.* v. 3, 689. "Ego ex te hodie faciam *pilum catapultarium*."

could hurl the lighter pilum, such as it existed in Cæsar's time, a distance of thirty metres, or about thirty-two yards; and that the weapon in its fall would pierce a plank of three centimetres, or about an inch and a fifth in thickness. The heavy one could only be hurled at close quarters. He contends against its use, but only on the grounds that a distance of thirty paces was absolutely required for the discharge of javelins between contending armies and the preparation for charging with the sword. He therefore assumes the discharge of pila to have been made at this distance of thirty paces.

It must be borne in mind, however, that in the memorable operations of Camillus the Roman soldiers received the attack of the Gaulish swordsmen on their pila, and then transfixed their shields *at close quarters* before they themselves drew their swords.^a Again, we have positive accounts of the great power of the pilum to pierce through both shield and breast-plate at one blow, which could only have been done at close quarters.^b No human arm could have propelled such a missile as even the lighter pilum with such terrible effect at a distance of thirty paces.

Polybius tells us that two pila were part of the Roman soldier's regular equipment, together with his brass helmet and greaves. He proceeds to describe the heavy pilum, and, with respect to the lighter one, he says, "οἱ γέ μιν λεπτοὶ . . . οὓς φοροῦσι μετὰ τῶν προειρημένων,"—that is, "the light pila which they carry with the before-mentioned" heavy ones.

Now, it is a reasonable inference from all this, that, as there were two kinds of pila used in action, the Roman soldier carried one of each. The lighter one would be hurled at the distance best suited to the soldier's personal strength; the heavy one at close quarters, the more effectually to smash the heavy defensive armour of the foe—such as that of the Macedonian phalanx for instance—before engaging him with the sword. Such a reading seems probable enough, and has at least the merit of neither falsifying our author, nor tampering with his text. The dimensions he has assigned to the weapon doubtless cause great difficulty; but the mention Florus makes of the *ingens pilum* in the Macedonian war plainly shows that some such heavy javelin was still in use at this subsequent period.

^a Plutarch in *Camill.* c. 40, 41.

^b Suidas quotes: "ἐξακοντίσας ὕσσον, δὴλῆσεν αὐτοῦ τὸν τε θυρεὸν καὶ τὸν θώρακα." Arrian, "ἵππους τρώσοντας καὶ ἵππότην κατακανοῦντες, καὶ θυρεῷ καὶ καταφράκτῳ θώρακι ἐμπαγέντος τοῦ κόντου." *Vegetius*, de Re Mil. lib. i. c. 20.

It must be observed that Dionysius of Halicarnassus, in his mention of the *pila*, terms them *χειροπληθῆ*, or as much as the hand could grasp, without further enlarging on the subject. Now Polybius may only have intended to express this same idea of a very ponderous, palm-filling shaft, without meaning to bind us down to an actual palm diameter—*παλαιστιαίαν*. In any case there is no difficulty in comprehending that, without imputing any superior strength to the men of that period, continuous practice^a from early youth in the use of any weapon would induce a proficiency far beyond anything we can now conceive. We know for instance that this was the case with the use of the sling of old; and, to come nearer home, we know that men of not so many generations past used bows in England, and shot distances far exceeding our modern efforts, simply by reason of early and continuous use.

Unless some such explanation be deemed satisfactory and admissible I fear we have no remedy but to suppose that the term *παλαιστιαίαν* must have had another meaning in the time of Polybius; or to admit, reluctantly, with M. de Reffye, that this word has been “sans doute falsifié par les copistes.”

Before quitting this period of the earlier use of the weapon, it may be well to notice the singular fact of the rarity, or rather almost non-existence, of examples of *pila* of any epoch of Roman domination in the Italian peninsula. It might reasonably have been expected that some such would have been met with at Pompeii, preserved intact, for our information, together with so many other reminiscences of Roman life. Nothing of the sort, however, would seem to have been found there; or at least nothing has been preserved in the Naples museum. In fact I know only of two possible examples of the *pilum* in all the museums of Italy that I have been able to inspect. These, as the Padre Garrucci informs me, were met with at Capena, on the banks of the Tiber, in the country of the Sabine Falisci. One was presented to the museum of the Capitol at Rome by Signor Augusto Castellani; the other is in the possession of the Benedictines of S. Callisto and S. Paolo-fuor-le-Mura at Rome, on whose property it was found, together with a mass of other most remarkable reliques. These examples are in too fragmentary a condition to justify any positive classification, but they have slender round stems, with the socket end of common lance-heads. It is

^a Ælius Spartianus in *Adriano Imperatore*: “Armisque et pilo se semper exercuit.” Vopiscus in *Aureliano*: “Nullum unquam diem prætermisit, quamvis festum, quamvis vacantem, quo non se pilo et sagittis, ceterisque armorum exerceret officiis.”

clear enough, however, these were either Roman pila, or the Sabine *veruta*, and from the concomitant pottery the latter attribution would seem more probable.^a

Such examples must have daily occurred—must be of almost daily occurrence—but iron antiquities are at a sad discount in Italian museums through a complete ignorance, or disregard, of their value. Hence the peasant-finder casts them aside as worthless, since they bear no market value; and many an historical treasure becomes lost for ever.

We arrive now at the time of Cæsar, when the pilum was in its zenith. Fortunately we are in possession of evidence which enables us to verify it satisfactorily. The museums of Bonn and Wiesbaden, as has been said already, contain the sepulchral monuments of three Roman soldiers, which were found in the vicinity. These warriors are sculptured, with their arms, in full military dress. Each holds in his right hand the national weapon, which appears to answer, as nearly as possible, to the lighter pilum of Polybius, and serves as a type by which to test discovery.

On one of the Bonn monuments is the effigy of Q. Petilius Secundus, of Milan, a soldier of the 15th legion. In this case the pilum is some six feet in length. The other is a similar military monument, only the pilum is somewhat shorter,—a portion of the shaft perhaps having been broken off, for the two iron heads agree in length. As a proper balance is required for this arm, I presume the length of shaft would depend in some measure on the description of wood of which it was made. Oak, for instance, would be far weightier than ash, or fir, or larch; and an oaken shaft would therefore be shorter than one of the other woods.

The Wiesbaden monument—that of a soldier of the 8th legion—will shortly be published by Dr. Lindenschmit in the *Alterthümer*, which already contains those of Bonn.^b In the same plate with these monuments is also given a Roman pilum found either in the *castrum* at Orlen, in Nassau, or one of the several other neighbouring Roman *castra*. This fine example of the weapon is preserved in the museum of Wiesbaden, where there are also several others with stems both round and square, discovered by the late eminent antiquary, Herr

^a It may here be mentioned that, among other objects of this Capena find, preserved in the Convent museum of St. Paolo, is an iron dagger in an iron sheath, to which is attached a strong iron chain for suspension to the side. The dagger-hilt is broken, but the sheath measures 16 inches by 2 inches in breadth. It had been wrapt, with an engraved Etruscan mirror and other objects, in a linen cloth, the impression of which is very visible on the oxydised metals.

^b Vol. i. heft viii. taf. 6.

Habel, in his researches in the Roman *castra* of Orlen, Irlich, Hofheim, and Heddernheim (*Castra Adriani*). It has manifestly been used in action. The barbs are compressed close down to the pyramidal point, as though it had been propelled through some hard substance, such as a wooden shield, for instance, and it is much bent.

The accompanying woodcut is taken from a cast^a of another of these Wiesbaden *pila*, prepared in Dr. Lindenschmit's laboratory from the original, which measures 3ft. 6 $\frac{1}{4}$ in. in length. The point, it will be observed, is in this instance of the pyramidal form of the weapons from Vulci before referred to. The stem terminates in a large square socket, which is not common. The outside measure of this socket is 1 $\frac{1}{4}$ in. square.

In addition to this evidence we can further adduce two more iron *pila*, in perfect preservation, found only a few years since in the bed of the Rhine at Mayence, together with a vast mass of other Roman reliques. These *pila* have been already illustrated in the *Alterthümer*.^b The points are of the usual pyramidal form; the base of one being sharply truncated. The upper part of the stem is quadrilateral, the lower round. A solid quadrilateral iron cap, through which the stem passes, served to cover the top of the shaft, binding wood and iron firmly together after the insertion of the terminal strig. Such mode of junction was certainly used in one of these examples, for a portion of such strig, or tongue, still exists within the cap. These weapons are of far lighter construction than the Wiesbaden *pilum*, and most probably are of a much more recent date. They are in excellent preservation, and Dr. Lindenschmit's researches have shown the head and upper portion of the stem to be of steel, while the lower part is of soft iron—in perfect accordance with Appian's account. The concussion of the blow on the enemy's shield sufficed to bend these slender weapons, and render them for the time completely unserviceable. In the case of the Wiesbaden monument the iron cap is there represented of so large a size as must have added considerably to the weight of the weapon.

Even the most sceptical, it may be presumed, would be satisfied with this amount of evidence. Accordingly, when the successful researches at Alise-Sainte-Reine, prosecuted under the auspices of the Emperor

^a Now deposited in the Ashmolean Museum at Oxford, together with the cast of the *gladius*, figured at the end of this paper.

^b Id. heft xi. taf. v.

of the French, led to the discovery of a number of Roman arms, many of which precisely resemble those of Mayence and Wiesbaden, they were at once seen to be old Roman pila—"exesa scabra rubigine pila"—belonging to the legions under Cæsar, who fought the Gauls at Alesia.

M. Verchère de Reffye, the Emperor's "Officier d'Ordonnance," has given us a full account of all these arms,^a of which, on the present occasion, the pila alone concern us. He describes them as slender stems, both round and square. Their length is about a metre, and the original weight, judging from their present decayed condition, might have been some 600 grammes, or about 20 ounces English, which would seem lighter than might have been supposed.

The points vary in form. Some of them have barbs—the ἀγκιστρῶτον of Polybius. Others terminate in a cone,^b or a small quadrilateral pyramid—ὀβελίσχους—like the pila found in the Rhine at Mayence. Here again it will be observed that these two latter forms differ from the dictum of Polybius; and some critics might have raised difficulties had not these pila been found in company with the barbed ones. The truncated cone, or pyramid head, would probably answer the purpose as well, since flesh, or other substances, when pierced, would close below the head, and render extraction difficult. Barbs are more liable to injury, becoming compressed on passing through any hard substance.

We further learn that there were three different ways of affixing the iron head to the shaft, viz. :—

1. The iron terminates in a socket, like ordinary spears; and in this the shaft is fixed, and secured by a rivet.

2. The iron terminates in a strig, six inches in length, traversed by a rivet. When these weapons were found the greater part had a ferrule above the rivet. These ferrules are both of a round and square form, with an inside diameter of $1\frac{1}{5}$ inch, which, as M. de Reffye considers, gives the diameter of the shaft. The head would seem to have been attached to the shaft by fixing one or more ferrules on to it, and then boring a place for the strig, which was finally secured by an iron rivet.

^a *Revue Archéologique*, x. 337.

^b These conical points are but the reproduction of a very archaic Oscan form of lance. Compare a bronze group, formerly in the Fejérvary collection, figured in the *Monumenti del Instit. Arch. Rom.* v. 50. The very large conical head of a Roman missile, but too short for a pilum, exists in the Mayence collection.

3. The end of the iron stem is flattened to the width of twenty-eight millimetres, or an inch and a sixth, for the purpose of inserting it in a cleft in the shaft prepared for its reception. This was secured by large, round, flat-headed rivets, which would show the shaft to have been quadrilateral, with a diameter of an inch and a sixth, this being the inside measurement of the rivets.

It has been objected that the uniformity of Roman discipline would not have sanctioned such variations in the chief military weapon. It is, however, impossible, after these many examples from Alesia, to suppose there was any one regulation pattern. Certain ranks, indeed, may have been armed with pila of one certain form, varying from those of other ranks. This is all we can say. It must also be borne in mind that the delicate form of the later pilum would require constant repairs and re-adjustment, which would soon create dissimilarity. Soldiers in an enemy's country must repair damages as best they may.

It is very clear, then, from these many examples of the pilum, that no rigid uniformity in its use was insisted on, either in the form of the head, or the mode of attaching the stem to the shaft. The stem itself occurs of square, round, and six-sided forms. We know of several modes of attaching it to the shaft, and still more may have existed. It seems futile, therefore, in any discussion on the subject, to lay down arbitrary rules on any such minor ever-varying details. The great point for consideration is, whether any imagined examples of the weapon correspond in their main and particular features with the accounts of Polybius and the other writers.

In fact the accounts left us by the very Roman writers themselves are most strangely dissonant, and contradictory. Polybius is decided enough in his narrative, however hard it may be to interpret reasonably, in accordance with our modern views. Cæsar also speaks clearly and repeatedly of that pilum of which, fortunately, we possess such good evidence. Plutarch, writing about the end of the first century, in his mention of the change in the weapon made by Camillus, terms it the ὕσσοις, or pilum; which word Polyænus, a later writer, who had no other authority than Plutarch, chooses, in his "Strategemata,"^a to change into ξυστὸς μακρὸς, or common long spear. Then comes Dionysius with his very difficult commentary,^b which would almost lead us to infer he had mixed up the two pila

^a *Polyæni Strategemata*. Berolini, 1756, lib. viii. Camillus. In the note on this passage the editor remarks, "Plutarchus, unde hic noster sua hausit, habet ὕσσοις."

^b Lib. v. c. 46, *vide supra*.

of Polybius together.^a We may well read his term, χειροπληθῆ, as applying to the larger pilum; yet he concludes by comparing the weapons to moderate-sized darts—μετρίοις ἀκοντίοις. Arrian, again, simply speaks of the pila as κοντοί, or darts; while Appian, who describes them closely, tells us they do not resemble darts at all—οὐκ ἐοικότα ἀκοντίοις.^b

We now come to the latest historical account of this celebrated weapon, which, as it originated and increased with Roman greatness, so it declined in equal proportion with it. Nor is it the least curious circumstance in the history of the pilum, that when Vegetius wrote in the reign of Valentinian, at the close of the third century, its very name seems to have died out—"quod *pilum* vocabant, *spiculum* dicitur."^c

Vegetius was an officer of high rank in the Roman army—he is styled *comes*—he was also a strict disciplinarian, and is consequently a very trustworthy authority. His words would show that the ancient pilum, half-iron, half-wood, as we have been used to see it, had become obsolete in the Roman army. Vegetius complains that the troops would no longer submit to their old severe discipline, or endure the weight of their arms.^d Hence the pilum had now dwindled down to a weapon termed *spiculum*, with a short tri-lateral and barbed iron head, some nine inches or a foot in length, with a shaft of five feet and a half. Its full length therefore remained much the same. Yet even in this reduced state, Vegetius goes on to say, the pilum, or spiculum, was used by very few of the regular troops, impatient perhaps of the continued practice required.^e It was chiefly employed by the barbarian mercenaries, under the name of *bebra*—and this is an important fact to bear in mind as we shall presently see. Still, however, it remained a formidable weapon; for, *when properly used*, it would penetrate both shield and breastplate, and once fixed in a shield, or other substance, it was difficult to remove. Such fatal effect was however only to be obtained by continued practice.^f There was

^a *Loc. cit.*

^b Lib. iv. *De reb. Gall.* c. 1.

^c Vegetius *De Re Mil.* ii. 23 de exercitatione militum.

^d Id. i. 20. "Sed cum campestris exercitatio, interveniente negligentia desidiaque, cessaret, gravia videri arma cœperunt, quæ raro utique milites induebant."

^e Vegetius, i. 20. "Instruendos igitur, ac protegendos omni arte pugnandi quocunque genere antiquorum armorum constat esse tirones."

^f Vegetius. loc. cit. "Missilibus autem, quibus utebatur pedestris exercitus, pila vocabantur, ferro subtili trigono præfixa, unciarum novem, sive pedali, quæ in scuto fixa non possent abscindi, et lorica *scienter et fortiter directa* facile perrumpunt: cujus generis apud nos jam rara sunt tela." Idem, lib. ii. c. xv. "Item bina missilia, unum majus, ferro triangulo unciarum novem, hastili pedum quinque semis, quod *pilum*

also a lesser dart—the *verutum*—with a similar, but smaller, iron point of five inches, and a shaft three feet and a half in length.^a

In this lesser weapon Professor Köchly sees the *γρόσφος*, or *hasta velitaris*, of Polybius. Examples of such missiles are rare, and some years since I fortunately obtained an example at Rheims, in France, which at the time was laid before the Society of Antiquaries, and is now engraved in our *Archæologia*.^b It is tri-lateral, and tri-barbed; which at once explains why it could not be easily extracted from any object it had once pierced. This is the last historical mention we have of the pilum—so far at least as I am at present aware.

Before going further, it may not be amiss to remark that our subject can never be well understood if we attempt to limit it by the account of Polybius. He, indeed, truly depicted the pilum of his own day; but times and sudden exigencies call for changes in all things. Thus the weapon of Polybius, if we take his account literally, does not agree altogether with that of Dionysius of Halicarnassus.

Then follows a marked change in the weapon by Camillus, about A.U.C. 386, which it seems to have retained ever after. Nor must we overlook Appian's account of the pilum^c on the occasion of the engagement with the Boian Gauls, under the Dictator Sulpicius, A. U. C. 396. He describes it as half iron, half wood, worked in quadrilateral form, and the iron as of *soft-tempered* quality, all but the point. He further remarks that the weapon is very unlike a javelin. This mention of the soft-tempered iron, at so early a date, would be remarkable as showing the discovery, at this early date, of rendering the foe defenceless by the destructive tactic of fixing the pilum in his shield, and bending it down. But Appian wrote about A.D. 140, and he is probably describing, like Dionysius, the pila of his own period, to which the use of soft iron for the pilum stem rather belonged.

We next have the double weapon of Polybius, and it is just possible that the heavier one may have been introduced at the period of the Carthaginian war, the

vocabant, nunc spiculum dicitur; ad cujus jactum exercebantur præcipere milites; quod arte et virtute directum, et scutatôs pedites, et loricatos equites sæpe transverberabat."

^a Idem. loc. cit. "Aliud minus, ferro triangulo unciarum quinque, hastili trium pedum semis, quod tunc vericulum, nunc verutum dicitur."

^b *Archæologia*, xxxvi. 81.

^c Appian, lib. iv. *De reb. Gall.* c. 1. "Τὰ δὲ δόρατα ἦν οὐκ εὐκότα ἀκοντίοις, ἀλλ' ἃ Ρωμαῖοι κάλουσιν ὑσσούς, ξύλου τετραγώνου τὸ ἥμισυ, καὶ τὸ ἄλλο σιδήρου, τετραγώνου καὶ τοῦδε, καὶ μαλακοῦ, χωρὶς γε τῆς αἰχμῆς."

more effectually to act on the superior armour and the elephants of the Africans. Polybius himself records an attack of Asdrubal on the Roman encampment in Sicily, when he was repulsed, and his elephants routed and captured, mainly by the use the Romans made of the heavy pilum, so at least I should read the words *ἐνεργοῖς τοῖς ὕσσοις*.^a Florus, too, in his mention of the dismay of the Macedonian phalanx at the destruction produced "*ingentibus pilis*," seems to render certain testimony to the continued use of the weapon at this later period.^b The term of *ingens* could not apply to the lesser pilum.

We now come to the pilum of Marius, and it is clear enough that a change had occurred yet again before his time. The extreme importance attached by Polybius to the junction of the shaft with the iron stem, by means of numerous rivets and other fastenings, had altogether vanished; and we find *two* rivets deemed sufficient for the purpose. Marius found the weapon in this phase; and he was thereby furnished with an opportunity of executing his well-known stratagem in the engagement with the Cimbri. This seems to have been regarded at the time as a remarkable innovation.^c Some have supposed that it was for the purpose of preventing the enemy from returning the pila hurled at them, that Marius directed one of the two rivets, referred to, to be replaced by a wooden peg. When the pilum pierced the hostile shield the concussion of the blow on striking snapped this wooden peg asunder. The result was, that the iron and the shaft, being simply held together by a single rivet, collapsed like the blade of a clasp-knife. Thus the pilum became useless to the foe, but not to Marius, for the shaft, pendant from the rivet, and sweeping on the ground, not only embarrassed the foe, but furnished the Romans with a handle to pull down his shield. I believe this to have been the real purpose of Marius; and the principle of his

^a Polyb. i. 40. "Προσπεσόντων δὲ τῶν θηρίων, καὶ τιτρωσκομένων μὲν ὑπὸ τῶν ἐκ τοῦ τείχους τοξευόντων, συνακοντιζομένων δ' ἐνεργοῖς καὶ πυκνοῖς τοῖς ὕσσοις, καὶ τοῖς γρόσφοις"—κ.τ.λ.

^b Flor. Epit. ii. 7. "Cum tamen nihil terribilius Macedonibus fuit ipso vulnere adspectu, quæ non spiculis, nec sagittis, nec ullo Græculo ferro, sed *ingentibus pilis*, nec minoribus adacta gladiis, ultra mortem patebant."

^c Plutarch. Marius, c. 25. "Λέγεται δὲ, εἰς ἐκείνην μάχην πρῶτον ὑπὸ Μαρίου καινοτομηθῆναι ὁ περὶ τοὺς ὕσσους. τὸ γὰρ εἰς τὸν σίδηρον ἐμβλημα τοῦ ξύλου, πρότερον μὲν ἦν δυσὶ περόναις κατεληγμένον σιδηραῖς. τότε δὲ ὁ Μάριος τὴν μὲν ὥσπερ εἶχε εἶασε, τὴν δ' ἑτέραν ἐξελὼν, ξύλινον ἦλον εὐθραυστον ἀντ' αὐτῆς ἐνέβαλε. τεχνάζων προσπεσόντα τὸν ὕσσον τῷ θυρεῷ τοῦ πολεμίου μὴ μένειν ὀρθὸν ἀλλὰ τοῦ ξυλίνου κλασθέντος ἦλου καμπὴν γίνεσθαι περὶ τὸν σίδηρον καὶ παρέλκεσθαι τὸ δόρυ διὰ τὴν στρεβλότητα τῆς αἰχμῆς ἐνεχόμενον."

When Plutarch wrote in the first century of our era the tradition of this stratagem of Marius must have been still fresh.

successful innovation, in the form of the soft-tempered iron stem, became adopted in Roman warfare shortly afterwards. This mode of attack is perfectly detailed by Agathias in his account of the *angon*, to which we shall presently have occasion to refer.

It will hence be seen that the use of the soft-tempered iron was another change subsequent to the times of Marius. Had he known of it, there would have been no occasion to remove one of the rivets for the purpose of bending down the pilum when fixed in the shield. It must be noticed that Plutarch's expression on this occasion would raise some doubts as to there having been yet another alteration at this period in the mode of joining the shaft and iron. His words are τὸ εἰς τὸν σίδηρον ἔμβλημα τοῦ ξύλου, the insertion, or graft, as it were, *of the wood into the iron*, not of *the iron into the wood*, as we assumed to have been the case with the Polybian pilum. The use of the common spear socket would at once meet this ἔμβλημα, were it not for the mention of the rivet-action, which renders the use of the socket impossible, and shows, at least, that this mode of attachment was *not* meant. The iron, indeed, must have extended in two longitudinal strips running up either side of the shaft, as is seen occasionally with lances and halberds; and some essayists have asserted this to have been the case. I leave it to others to determine whether the words of Dionysius, προῦχοντας κατ' εὐθείαν ἐκ θατέρου τῶν ἄκρων, support this interpretation, or not. So far as the stratagem of Marius is concerned, it would be perfectly immaterial whether the fork was formed by the wooden shaft, or by the iron stem. So long as either played on a single rivet the result would be the same. All we can say is that we have not yet found any pilum heads of such construction, but this proves nothing. The main object in calling attention to the matter at all is to show how continuous the changes or modifications of the weapon must have been; and how useless it is to propose to limit them by any kind of dogma.

We now enter on barbarous times, when the Romans, driven from all their transalpine possessions, struggled to maintain even the imperial city itself against the conquering Teuton. Agathias, writing in the sixth century, rivals the preciseness of Polybius in his account of the Frankish weapon, the *angon*, to which he deservedly attaches much importance. It is described as a moderate-sized javelin with long barbs, and a shaft covered with iron plates to defend it from a sword-cut. We learn from him also the purpose of the Franks in using this weapon, and the way they used it.^a There is not, however, one word

^a Agathias, *Hist.* xi. 5.

further as to the make or length of the weapon which would justify the assumption that it resembled the actual pilum in any of its peculiarities except that it was barbed. It will, however, be seen from this account that the Frankish angon was a kind of cross between the legitimate old classical pilum and the later spiculum of Vegetius. It must have had the strong barbed head of the former with the short iron stem and long wooden shaft of the other. Had the angon had the long pilum stem the iron plates would not have been required to ensure it from sword-cuts. Possibly the Franks discovered that the double advantages of both spear and javelin were combined in the form of the more substantial angon. The slender, soft-tempered, long iron stem of the true pilum was manifestly but ill-fitted to receive a cavalry charge. No weapon, however, purely answering to what the pilum must have been according to Agathias—that is a barbed pilum head on a short stem some nine inches or a foot in length—has yet been met with. The thin iron plating of the shaft would hardly survive so long a period of corrosion.

But, instead of this, an arm, perfectly corresponding to the old Cæsarean pilum, has been found occasionally in graves; and because such graves were Teutonic, and the weapon barbed, it has been the fashion of late years to term them *angons*. Yet such examples are but rare, and we must consider the angon must have been in very general use indeed among the Franks, to justify the appellation of ἐπιχώρια δόρατα given by Agathias. Their merely occasional presence then in the numbers of Merovingian and Ripuarian graves yearly investigated in France and Germany would more reasonably prove them to have been emblems of military leadership, rather than ἐπιχώρια δόρατα, or the national weapon. Professor Köchly^a is strongly disposed to see the real Cæsarean pilum in these rarely-occurring examples, and such an attribution is probably correct.

It may at first be considered difficult to show in what way the Franks, and other Teutons, obtained possession of a weapon so closely resembling the pilum of Cæsar, as this pseudo-angon; and the more so, when Vegetius gives us to understand the old pilum had become obsolete even in his time. Certain Roman legions, however, in the more remote provinces may have continued its use down to a very late period, and isolated examples must have survived for centuries. Moreover Vegetius himself has left us the important information, that the *barbarian troops* in the Roman army alone retained the use of the spiculum, or altered pilum, under

^a Loc. cit. Compare also the Orlen pilum, now in the Wiesbaden museum, figured in Lindenschmit's *Alterthümer* (band i. heft 8, tav. 6), with the plate of angons in *Archæologia*, vol. xxxvi.

the name of *bebra*—a name we never meet with elsewhere. They were therefore accustomed to the use of the weapon, which they may have subsequently restored in the Teuton ranks to its Polybian character—for the so-called angon is invariably barbed. In any case the angon was most closely allied with the pilum, and used in precisely the same manner, and for the same purpose.

The whole history of the Roman pilum, during the almost completed millennium of its authenticated existence, from the *Horatia pila* of Ennius and Livy, to its final mention in the military records of Vegetius, is somewhat perplexing, as might well be expected. The merely incidental notices of it that occur in the works of many writers, at very long intervals, afford the only light we have to guide us in the attempt to track its many changes and vicissitudes. Yet, on the whole, its course is tolerably clear.

Nor can doubt exist as to the great object of its use. Marius employed his pila against the Cimbri; the Dictator Sulpicius against the Boian Gauls; Cæsar against the Transalpine Gauls; all for the same one purpose of bearing down the enemy's shield, and rendering him easily vulnerable. So long as shields remained in use, the great desideratum in warfare was to deprive the foe of this protection. Cæsar relates an instance even of his soldiers pulling down the shields of the Gauls with their hands.^a Precisely similar, according to Agathias, were the tactics of the Franks. The Sicambrian warrior planted his angon deep in the foeman's shield, bore it down by sheer force, and then used his *francisca* with fatal effect.

This angon of the Franks, so long withdrawn from identification, like the Roman pilum, had almost passed into a myth, when, some years since, I discovered an example of it in the Musée de l'Artillerie at Paris, which I still believe to be the most reconcileable with the account of Agathias. It was found in a Frankish grave in the department of the Moselle, and is engraved in our *Archæologia*.^b It was then bent at right angles, and one could well picture to one's self the fierce Frank wrenching it down, as it stood quivering in his adversary's shield, till it bent under his weight.

When I last saw the weapon at Paris, it had been unfortunately restored to its

^a Cæsar, *De Bell. Gall.* i. 52. "Reperti sunt complures nostri milites, qui in phalangas insilirent, et scuta manibus revellerent, et desuper vulnerarent."

^b *Archæologia*, xxv. plate v.

original form, and thereby totally deprived of the historic interest attached to it as a probably unique illustration of the use of the angon, as detailed by Agathias.^a

Dr. Lindenschmit's kindness enables me further to exhibit a facsimile model of a Roman *gladius* (see woodcut) found at Bischofsheim, near Mayence, with a number of other Roman objects. It measures 25 inches in length, but a portion of the hilt is wanting. Its greatest width is an inch and three quarters. As will be observed, it is double-edged, and tapers away to a long, and extremely strong, almost quadrilateral point, which seems to have been the speciality of the weapon. If the temper of the blade was equal to the strength of the point, it would have been capable of piercing anything.

Examples of Roman *gladii* are very rare. Dr. Lindenschmit has engraved one in the *Alterthümer*, found in the Rhine near Bonn. It is about an inch and a half longer than this Mayence example, and has the word SABINA stamped on the handle.^b

Another example has been quite recently found in Würtemberg. It is some two inches and a half longer and something broader than ours, which is precisely of the same size with the two *gladii* ^c found in the excavations of the Emperor of the French at Alise-Sainte-Reine. I know of no further examples of the weapon than these five.

^a Examples of the pilum might reasonably have been expected in England, but I only know of one possible instance, figured in Roach Smith's *Collectanea Antiqua*, vol. vi. pl. 2, fig. 4. This was found in a Roman *castrum* on Hod Hill, near Blandford, Dorset, with other Roman reliques. It has a pyramidal cusp, and measures 22 inches, though broken.

^b *Alterthümer*, vol. i. heft viii. taf. 6.

^c *Revue Archéologique*, vol. x. Armes d Alise.